

LISTING OF CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) An ink cartridge, comprising:
a receptacle having an ink chamber for storing ink; and
a circuit board having a storage device for storing data relating to a marking
~~material for printing the ink, said circuit board being disposed on the receptacle and comprising:~~
~~at least two ground terminals, each having a ground contact portion arranged on~~
~~said circuit board at two edges thereof that are located on one axis thereof, said ground contact~~
~~portions being arranged in a first row having outermost ends; and~~
~~a plurality of terminals, each having a contact portion, arranged on said circuit~~
~~board, for read/write operations on said data relating to the marking material for printing ink, said~~
~~plurality of terminals including a power supply terminal and a control signal terminal, said~~
~~contact portion of said power supply terminal being arranged in a second row parallel to said first~~
~~row;~~

wherein said ~~at least two ground terminals~~ ground contact portions are not the
~~terminal~~terminal contact portions in closest proximity to said power supply terminal contact
portion and are located at the outermost ends of said first row, and
wherein said first row is located further from a center of the circuit board than the
second row.

2. (Currently Amended) A circuit board according to claim 1An ink cartridge,

comprising:

a receptacle having an ink chamber for storing ink; and

a circuit board having a storage device for storing data relating to the ink, said

circuit board being disposed on the receptacle and comprising:

at least two ground terminals that are located on one axis thereof, said ground

terminals being arranged in a first row; and

a plurality of terminals arranged on said circuit board, for read/write operations on

said data relating to the ink, said terminals including a power supply terminal, at least some of

said plural terminals being arranged in a second row parallel to said first row, each said row

having outermost ends.

wherein said plurality of terminals and said ground terminals are arranged in a

single row, with two of said at least two ground terminals being located at the outermost ends of

said row are not the terminals in closest proximity to said power supply terminal and are located

at the outermost ends of said first row, and

wherein said first row of terminals is located further from a center of the circuit

board than the second row.

3. (Cancelled)

4. (Currently Amended) A circuit boardAn ink cartridge according to claim 32,

wherein said plurality of terminals include a clock signal terminal, said clock signal terminal

being located between two of said at least two ground terminals.

5. (Currently Amended) ~~A circuit board~~An ink cartridge according to claim 32,

wherein said two of said at least two ground terminals and said power supply terminal are located in different said rows.

6. (Cancelled)

7. (Currently Amended) ~~A circuit board~~An ink cartridge according to any one of claims 3-51, 2, 4 and 5, wherein said plurality of terminals are arranged at intervals of approximately 1 mm in the ~~direction of~~row formation of said rows~~direction~~.

8. (Currently Amended) An ink cartridge, comprising:

a receptacle having an ink chamber for storing ink; and

~~A~~a circuit board comprising:

~~a storage device for storing data relating to a marking material for printing the ink,~~

~~said circuit board provided to a marking material for a print cartridge having a substantially rectangular shape, wherein said circuit board comprises:~~

~~two ground terminals arranged on said circuit board at two edges thereof along one side thereof, said ground terminals being arranged in a first row having outermost ends; and~~

~~a plurality of terminals arranged parallel to one side of said circuit board, and used for storing said data, said plurality of terminals including a power supply terminal and a control signal terminal, at least some of said terminals being arranged in a second row parallel to one side of said circuit board and parallel to said first row,~~

wherein said two ground terminals are not the terminals in closest proximity to said power supply terminal, and are arranged at the outermost ends of said first row, and
wherein said first row of terminals is located further from a center of the circuit
board than the second row.

9. (Cancelled)

10. (Currently Amended) ~~A circuit board~~An ink cartridge according to claim 98,
wherein said plurality of terminals includes a clock signal terminal, and said two ground terminals and said clock signal terminal are located in ~~a same~~said first row, and ~~that said same~~
~~row is different from a row in which~~said power supply terminal is located in said second row.

11. (Currently Amended) An ink cartridge, comprising:
a receptacle having an ink chamber for storing ink; and
~~A~~a circuit board for a marking material receptacle, comprising:
a storage device for storing data relating to ~~a marking material for printing~~the ink;
a plurality of terminals arranged on said circuit board, said terminals including a power supply terminal, andthe terminals being arranged in a plurality of rows,
wherein two of said terminals are ground terminals arranged so that a printing device can determine if the ~~marking material receptacle~~ink cartridge has been installed correctly, where said ground terminals are located at the outermost ends of a firstsaid row of said terminals that is different from a secondsaid row of said terminals that contains said power supply terminal, said first and said second rows being parallel, and

wherein said ground terminals are not the terminals in closest proximity to said power supply terminal, and

wherein said first row of terminals is located further from a center of the circuit board than the second row.

12. (Currently Amended) ~~A circuit board~~An ink cartridge according to claim 11, wherein said power supply terminal is located at the ~~a~~ center of the second row ~~that contains said power supply terminal~~.

13. (Currently Amended) ~~A circuit board~~An ink cartridge according to claim 11 or 12, wherein the terminals in the second row containing said ground terminals and the terminals in the first row containing said power supply terminal are arranged in alternating fashion.

14. (Currently Amended) ~~A circuit board~~An ink cartridge according to claim 11 or 12, wherein the first row ~~containing said ground terminals~~ contains four terminals and the second row ~~containing said power supply terminal~~ contains three terminals;

15. (Cancelled)

16. (Currently Amended) ~~A marking material receptacle~~An ink cartridge according to claim 15, wherein said ~~marking material receptacle~~ink cartridge is one of ~~an~~liquid ink cartridge and a toner cartridge.

17. (Currently Amended) A printing system comprising:

a ~~marking material receptacle~~ clean ink cartridge according to claim 1511; and
a printing device that comprises a plurality of contact pins for contacting said
ground terminals;

wherein said printing device measures electrical continuity between said contact pins
and said ground terminals when said ~~marking material receptacle~~ ink cartridge is installed correctly.

18. (New) An ink cartridge for use in a printer having a plurality of electrical
contacts, comprising:

a receptacle having an ink chamber for storing ink, a top surface, a bottom
surface, and a recessed circuit board mounting portion; and
a circuit board having a storage device for storing data relating to the ink, and
both a circular opening and a notch for positioning when said circuit board is attached to the
receptacle, said circuit board being disposed in the recessed circuit board mounting portion and
comprising;

at least two ground terminals that are electrically connected together, each having
a ground contact portion, said ground contact portions being arranged in a first row having
outermost ends, said ground terminals not being electrically connected to the storage device; and

a plurality of terminals, each having a contact portion, arranged on said circuit
board, for read/write operations on said data relating to the ink, said plurality of terminals
including a power supply terminal, said contact portion of said power supply terminal being
arranged in a second row parallel to said first row;

wherein said at least two ground contact portions are not the terminal contact portions in closest proximity to said power supply terminal contact portion and are located at the outermost ends of said first row,

wherein said first row is located further from a center of the circuit board than the second row,

wherein said ground contact portions and said terminal contact portions are staggered so that, during mounting on the printer, the printer contacts corresponding respectively to the terminals of the first row do not touch the terminals of the second row, and

wherein said contact portions lie in a plane that is parallel to and disposed between the top surface and the bottom surface of the receptacle.